



THE DENVER POST

ride the rockies

PRESENTED BY

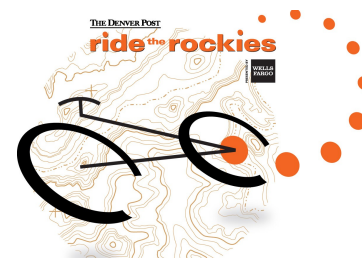
WELLS  
FARGO

# Flat Tops & Jagged Peaks ~ Geology along the Frisco Loop 2007 Ride The Rockies Route

Tom Casadevall and Janet Slate

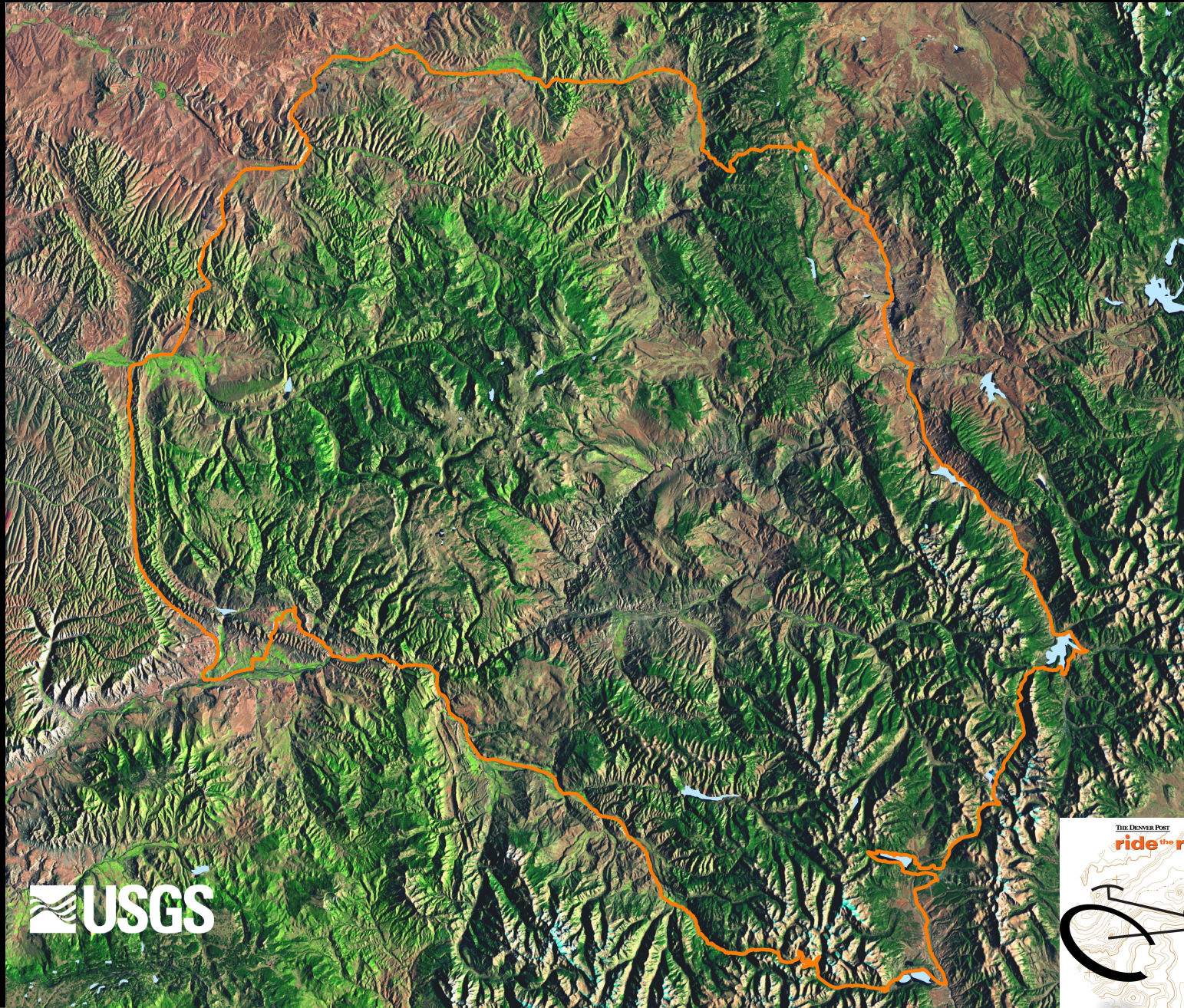
U.S. Geological Survey, Denver, Colorado

U.S. Department of the Interior  
U.S. Geological Survey

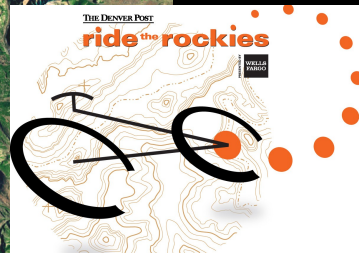




# Ride The Rockies 2007



 USGS

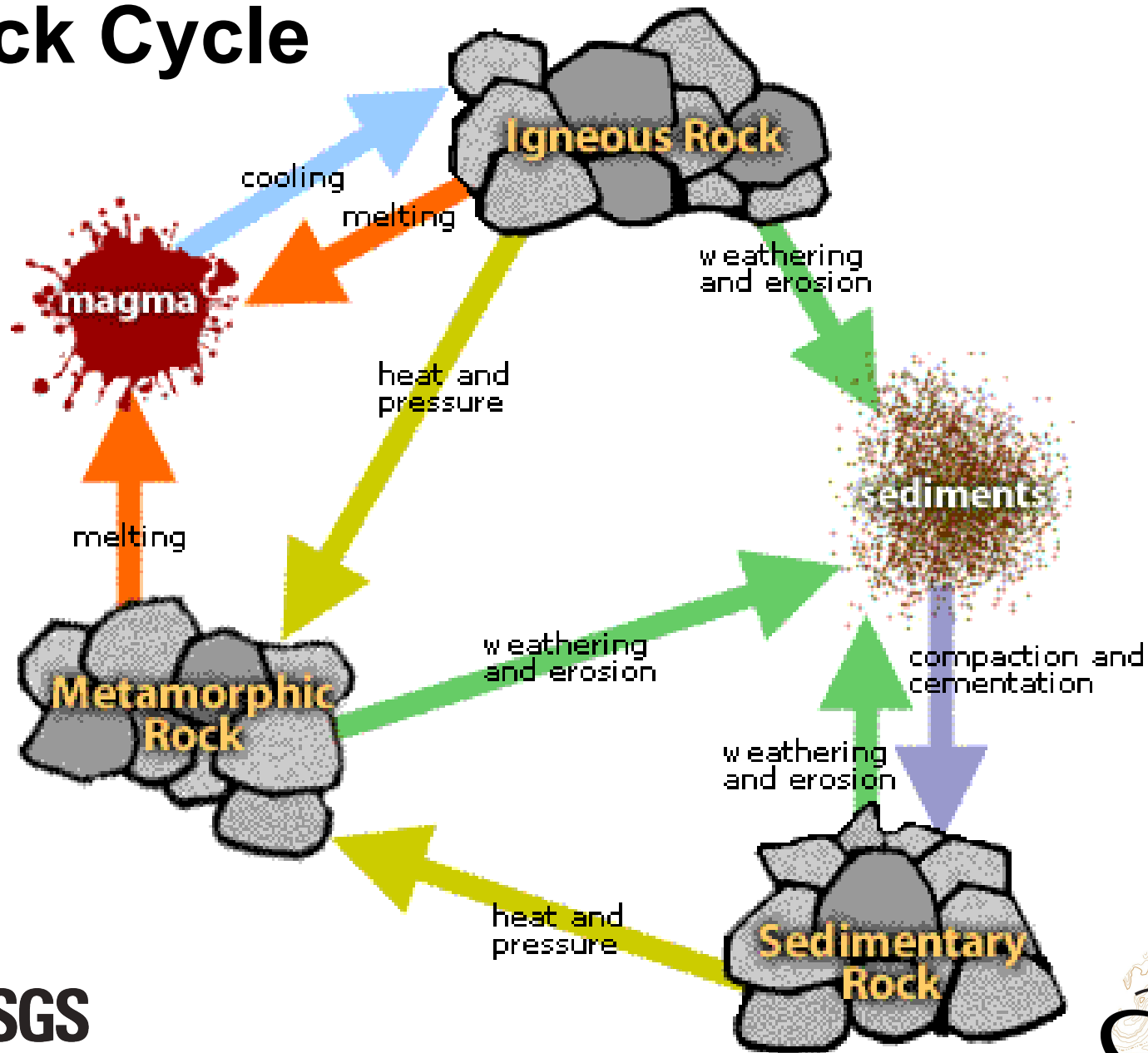




# What we're going to talk about:

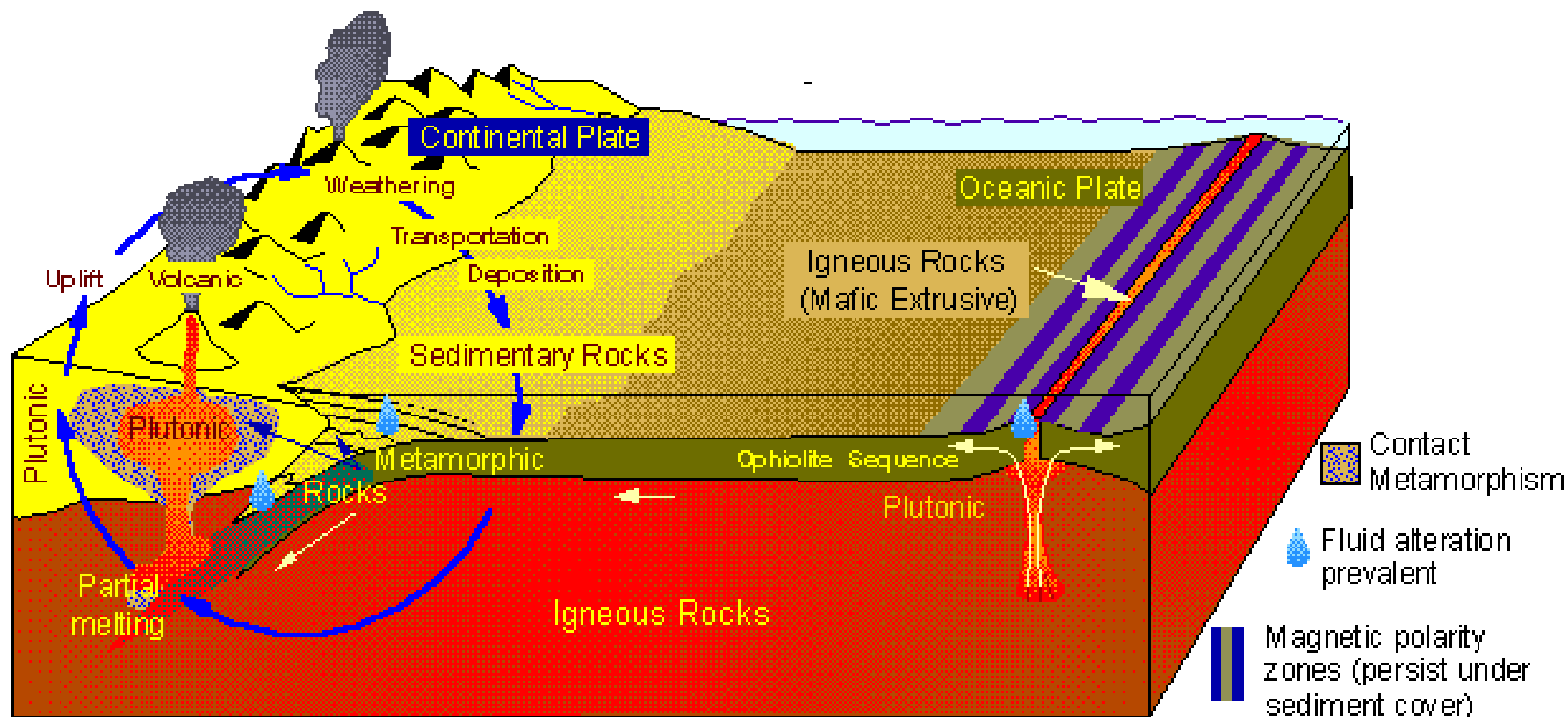
- Basic “Geology 101” stuff
- Geologic history of Colorado
- Day-by-day geology along the Ride Route

# Rock Cycle





# Relating Rocks to Plate Tectonics



Redrawn by W. Milner, as modified from Montgomery (1990) and Monroe and Wicander (1994).



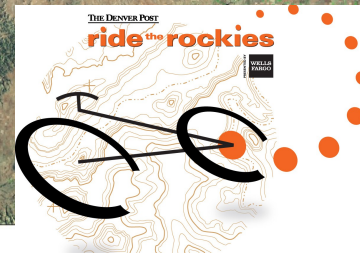
PLATEAUS

MOUNTAINS

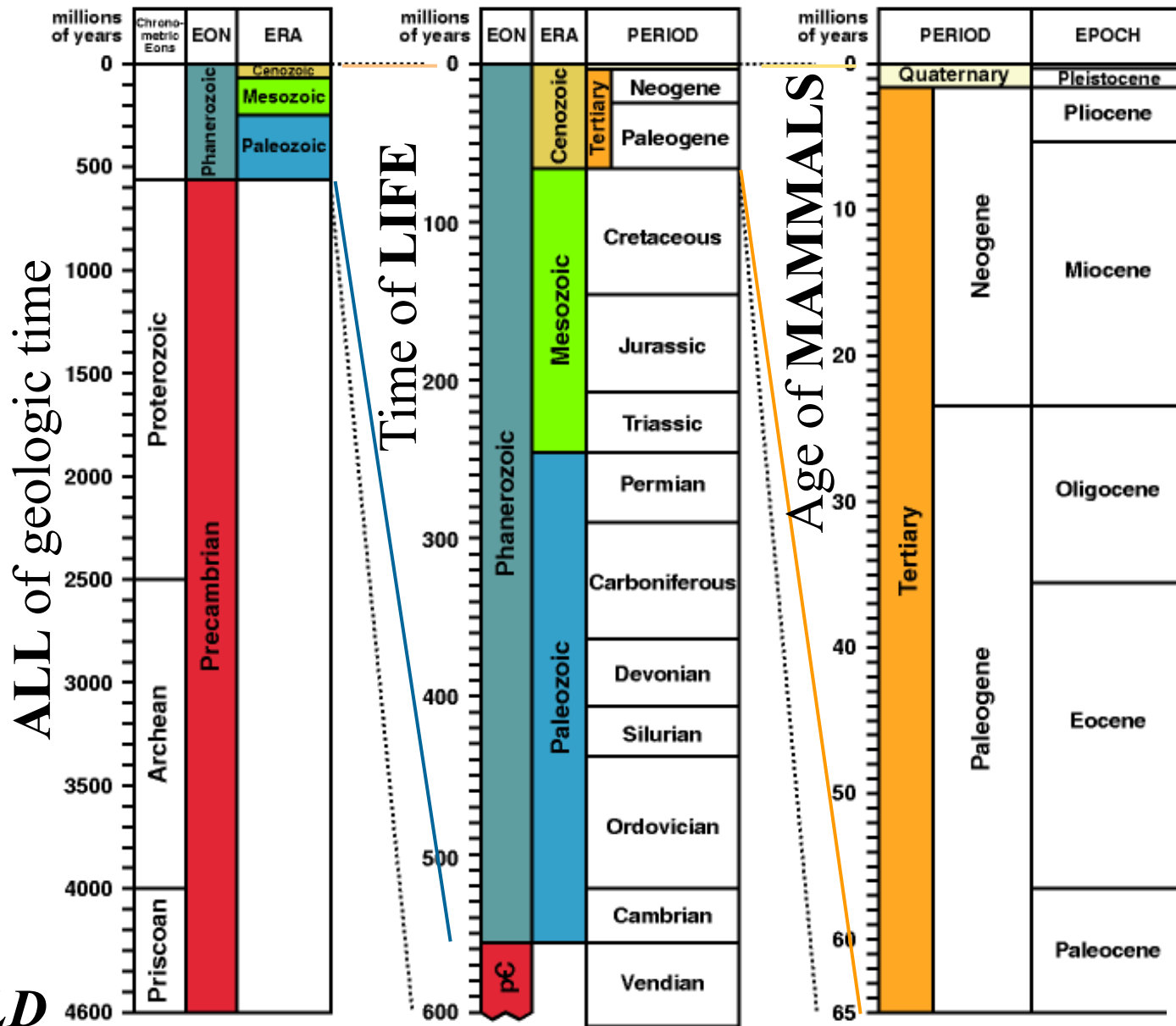
PLAINS



# Physiographic Provinces



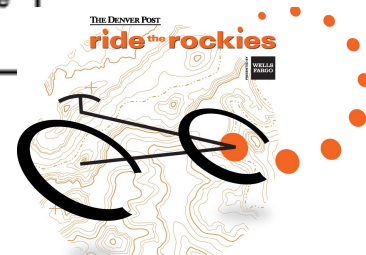




*YOUNG*

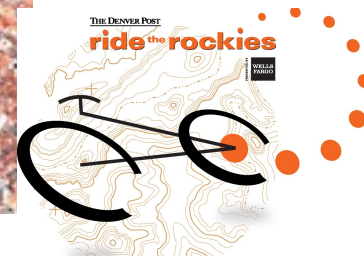
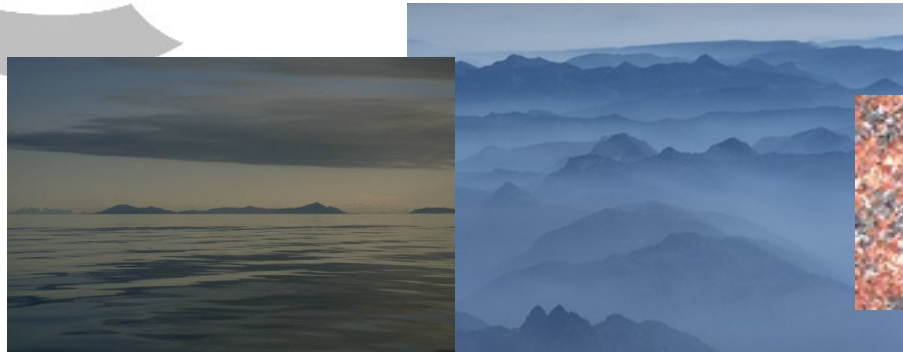
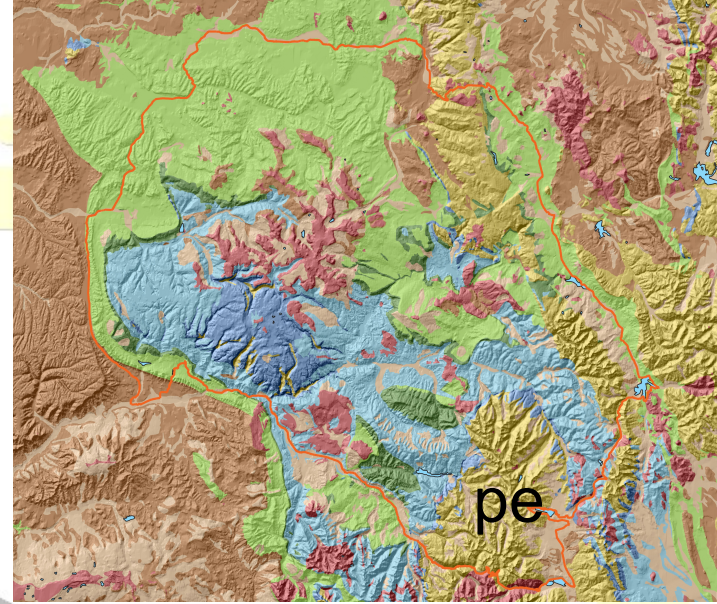
← Holocene/Recent  
<10000 years

# Geologic Time Scale

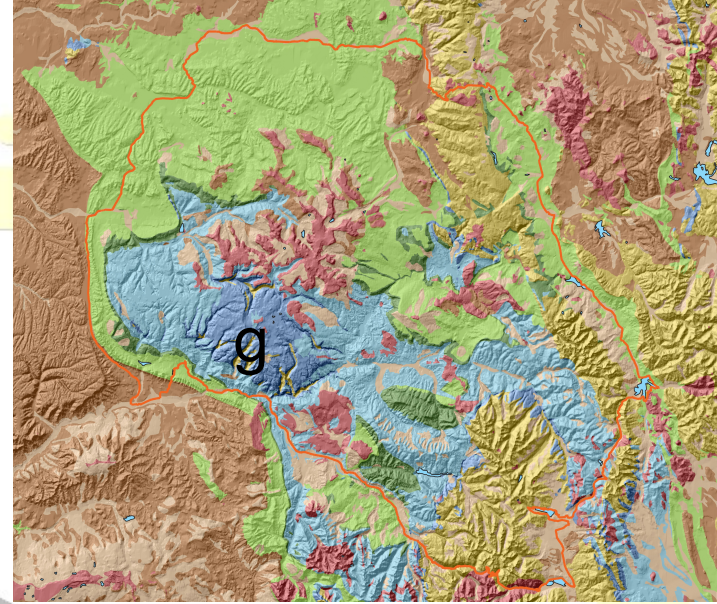
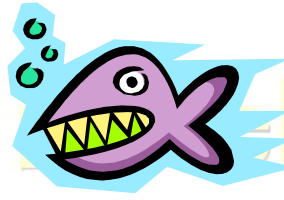


# Precambrian

- 85% of geologic time
- Basement rocks
- Older than 540 million years ago
- Metamorphic & igneous rocks ~ including gneiss, schist, and quartzite; and granite

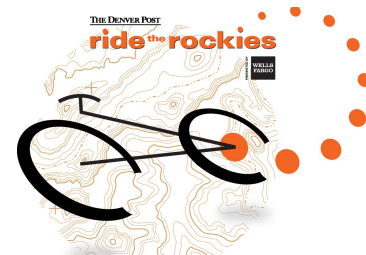
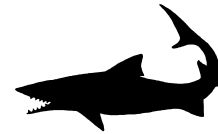
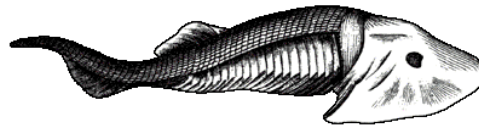
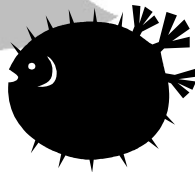






# Paleozoic

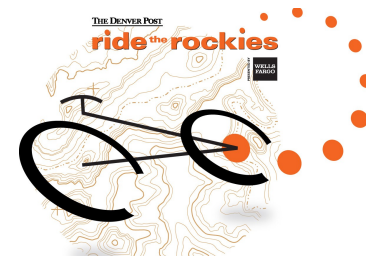
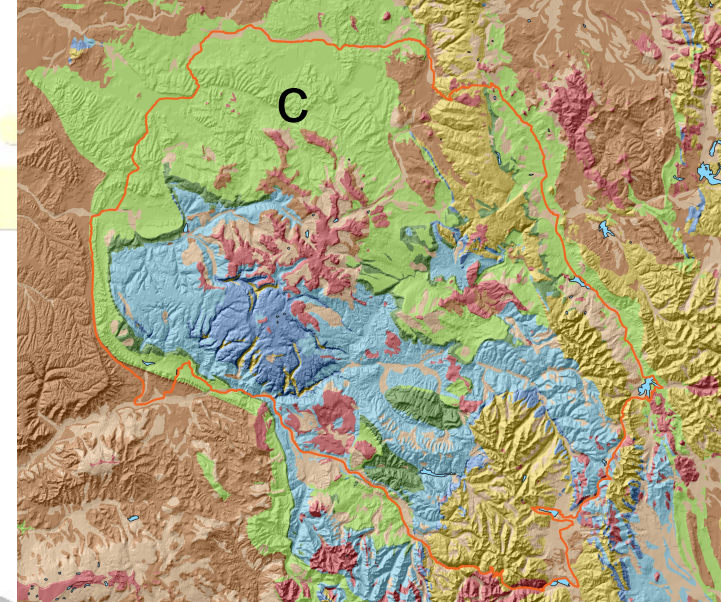
- Time of early life
- 245 to 540 million year ago
- Widespread marine deposition ~ limestone
- Ancestral Rocky Mountains ~ sandstone, siltstone, shale, conglomerate



# Mesozoic



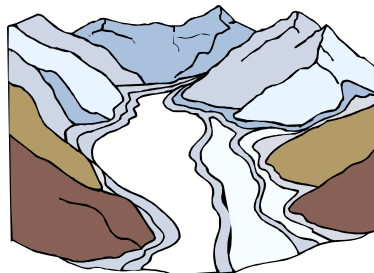
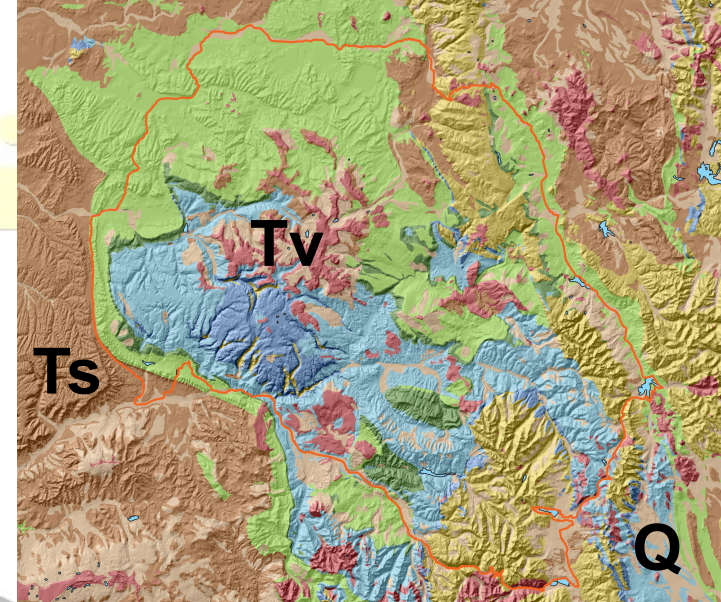
- Age of dinosaurs
- 66 to 245 million years ago
- Deserts, intermittent streams, coastal plains, dunes ~ sandstone, siltstone, claystone
- Shallow seaway ~ shale, sandstone, coal





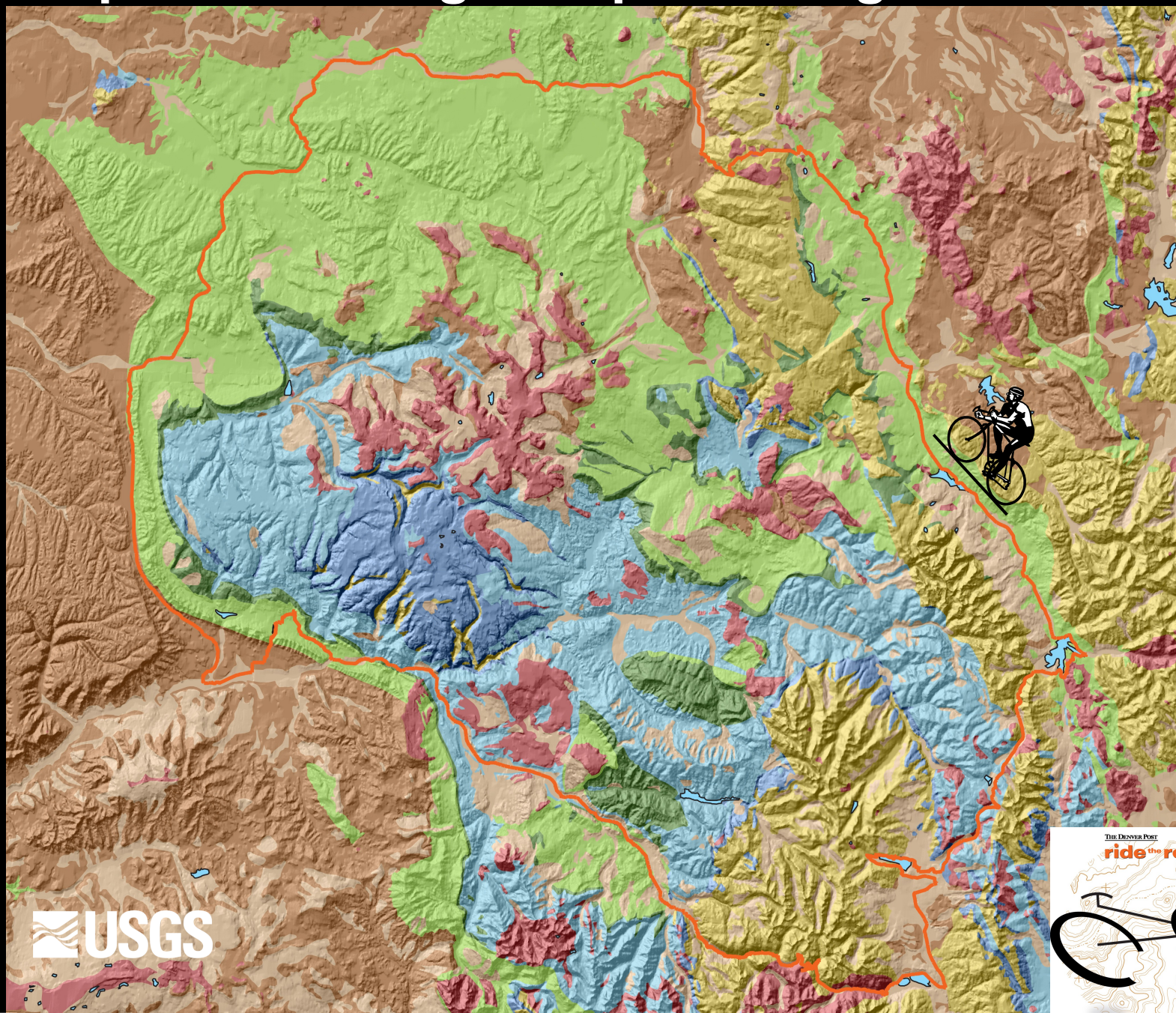
# Cenozoic

- Now to 66 million years ago
- Laramide Orogeny (mountain building)
- Tertiary (1.8 to 66 m.y. ago) ~ sedimentary (Ts) and igneous rocks (Tv)
- Quaternary (now to 1.8 m.y. ago) ~ stream, glacial, and landslide deposits

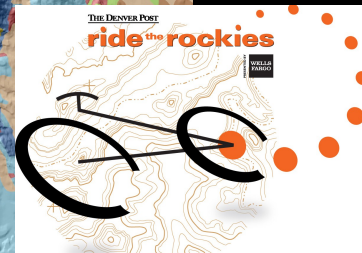




# Simplified Geologic Map showing Ride Route

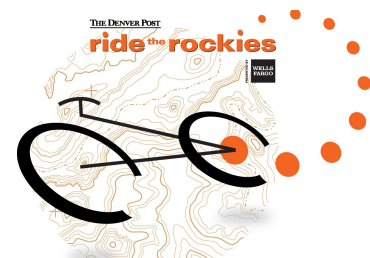
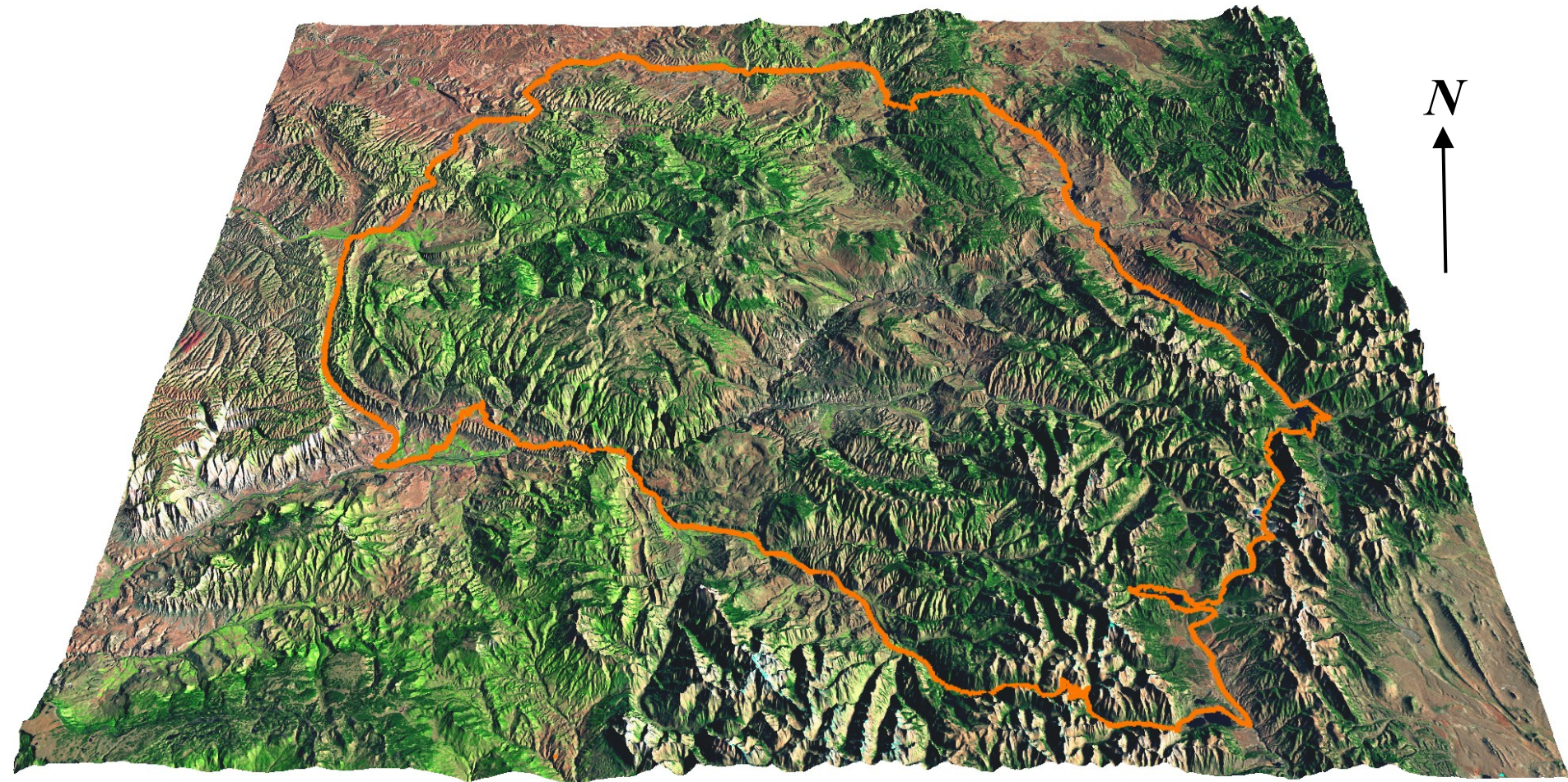


(after Tweto, 1979)

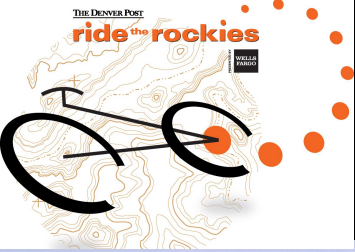




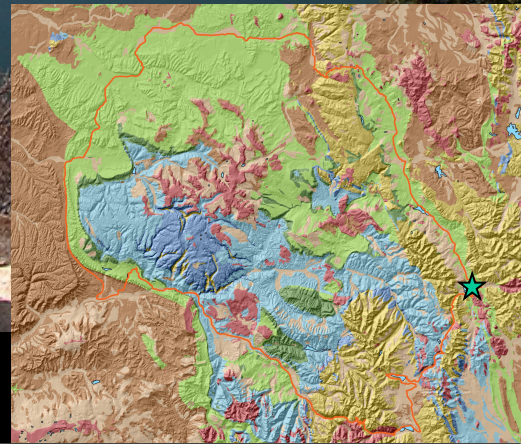
# Landsat 3-D





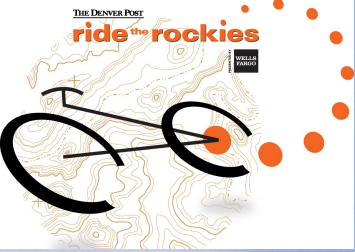


# Day 1 ~ Lake Dillon

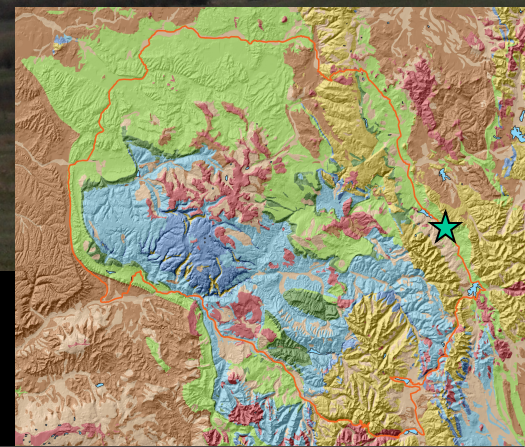


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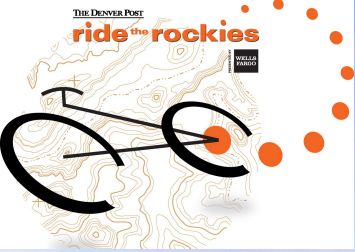


# Day 1 ~ Gore Range



 **USGS**

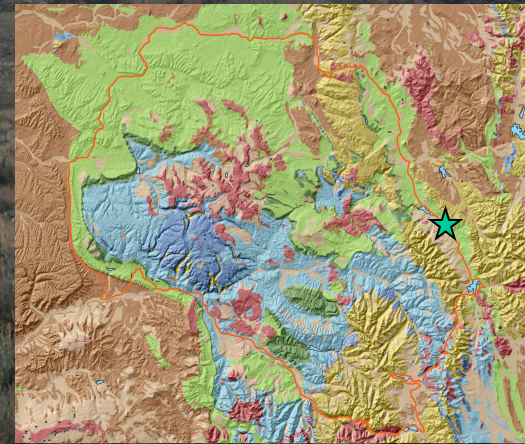




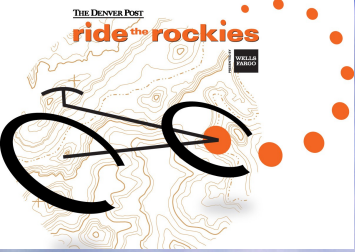
# Day 1 ~ Williams Fork Mountains



 USGS



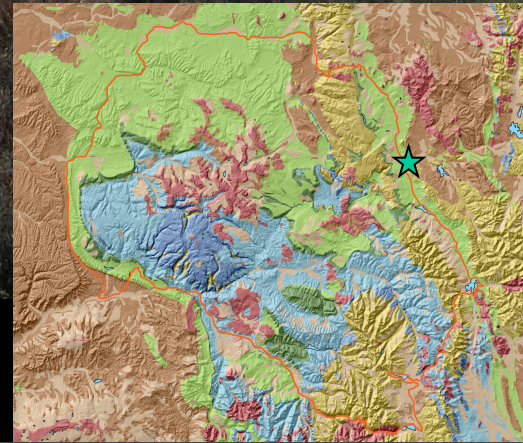




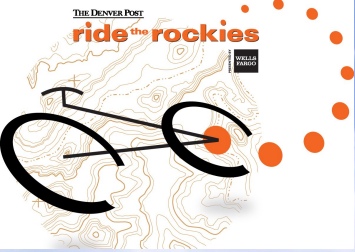
# Day 1 ~ Colorado River



 USGS







# Day 1 ~ Wolford Mountain

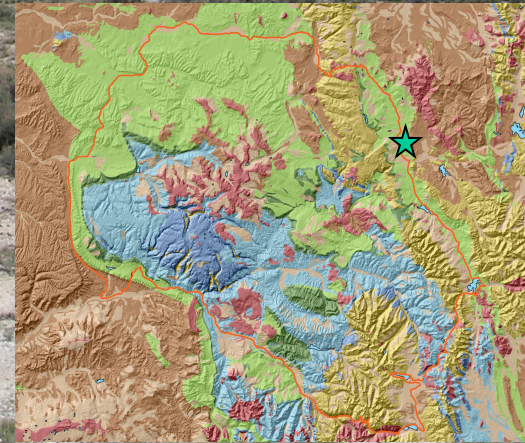
**Williams Range  
thrust fault**



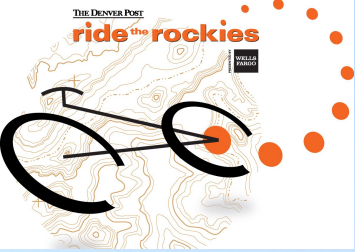
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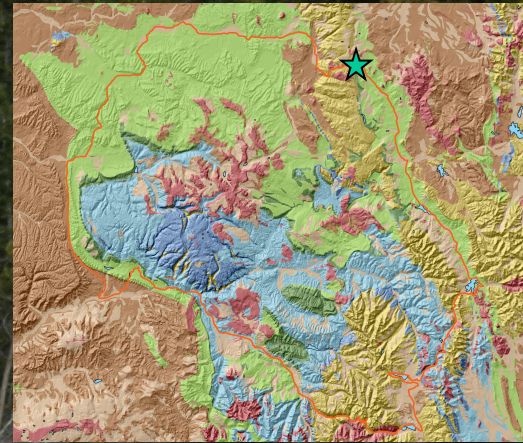
 **USGS**



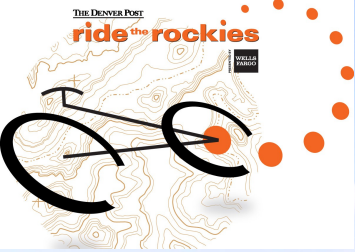




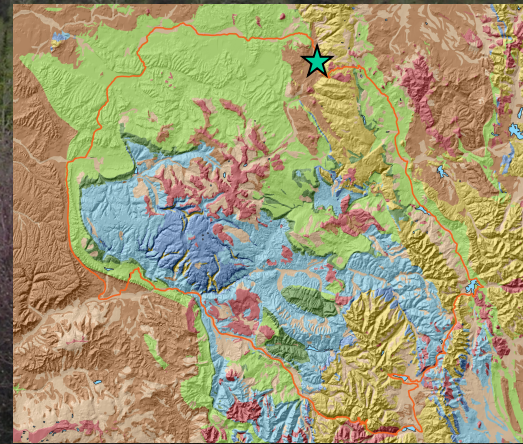
# Day 1 ~ Rabbit Ears Peak



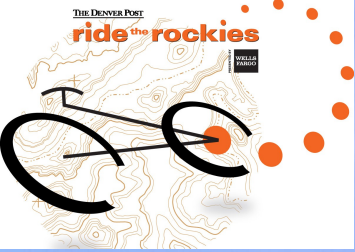




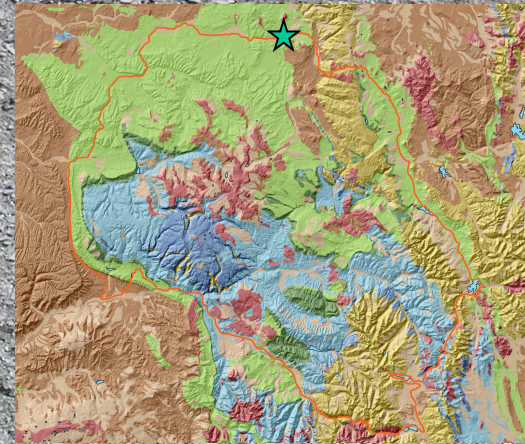
# Day 1 ~ Yampa River Valley





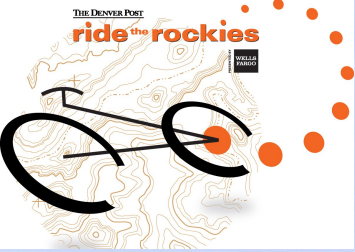


# Day 2 ~ Along Hwy 40



USGS

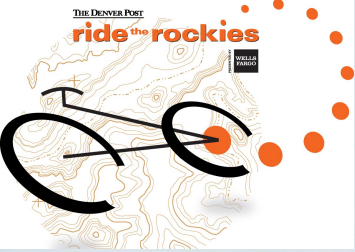




# Day 2 ~ Along Hwy 40



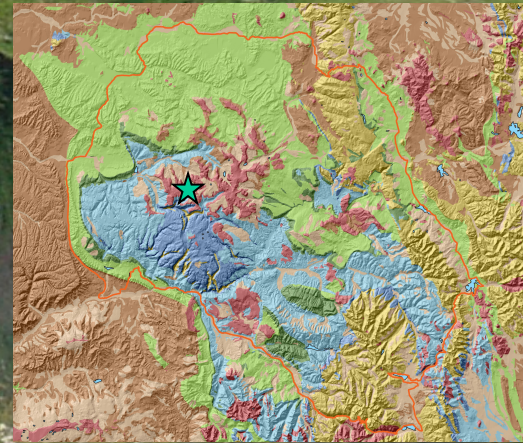




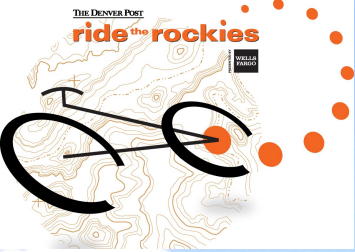
# Day 3 ~ Flat Tops Wilderness



Blanco Ranger District photo



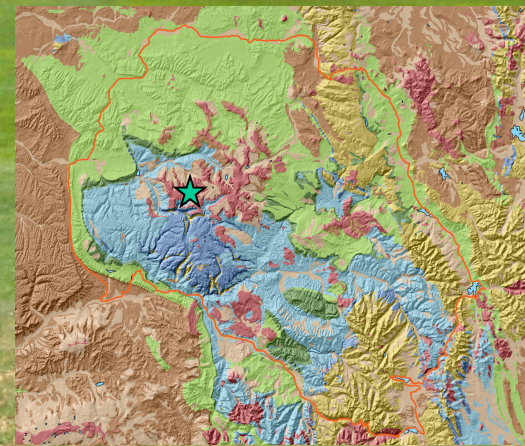




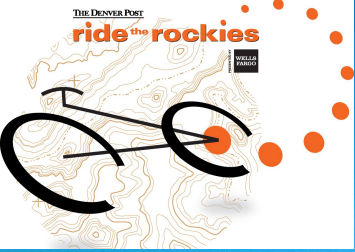
# Day 3 ~ Flat Tops Wilderness



Blanco Ranger District photos



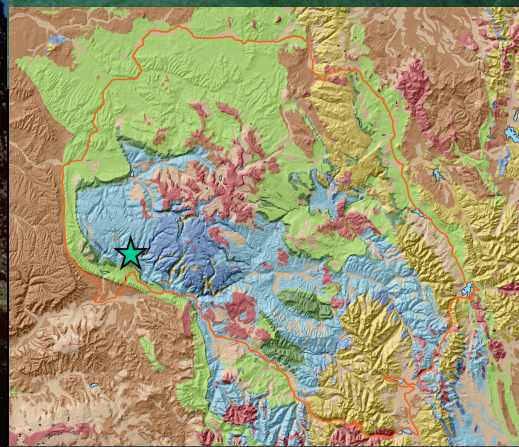




# Day 3-4 ~ Grand Hogback

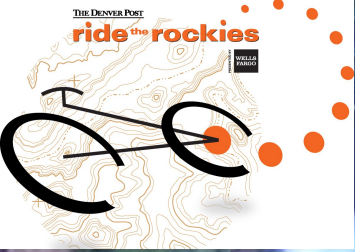


© Brandon Jett



© 1972 Christo

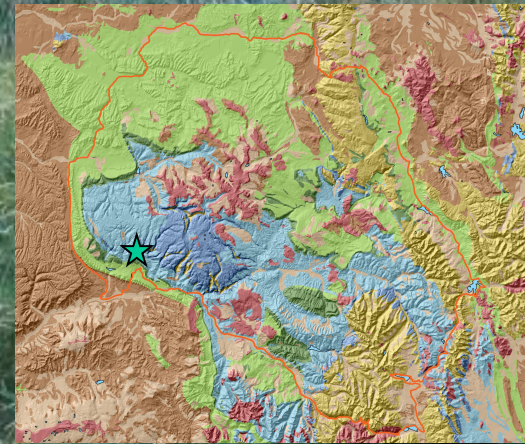




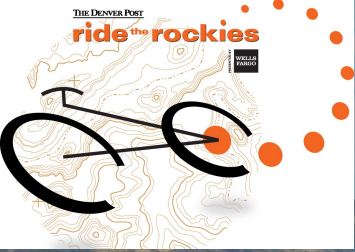
# Day 3-4 ~ Rifle Falls



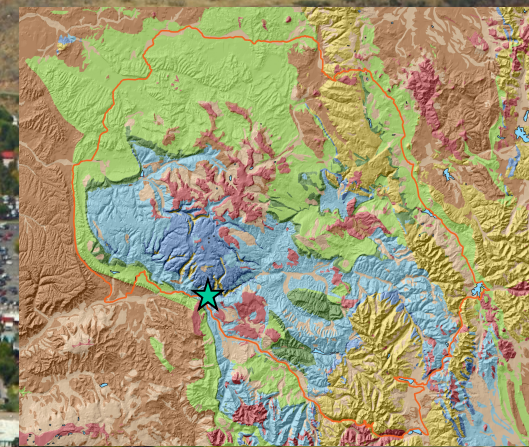
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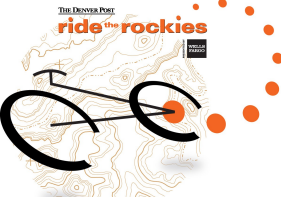


# Day 4 ~ Glenwood Springs



© Weldon Schloneger



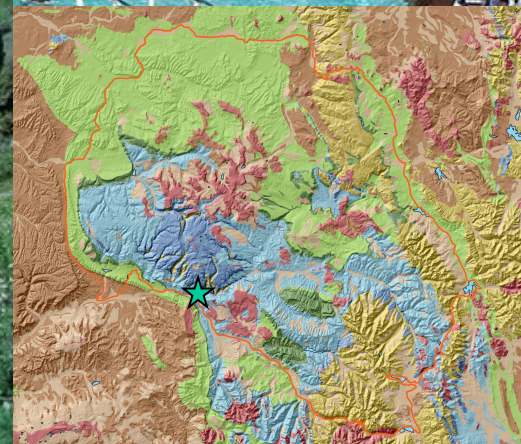


# Day 4 ~ Glenwood Springs

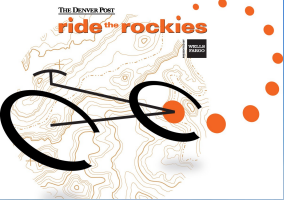


© smartinfo (Webshots ID)

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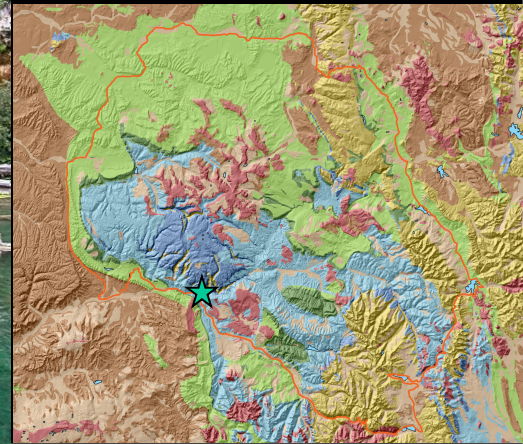




# Day 4 ~ Glenwood Springs

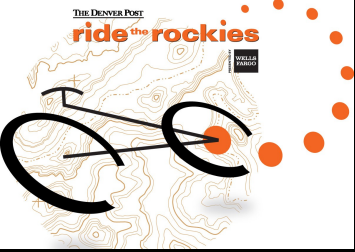


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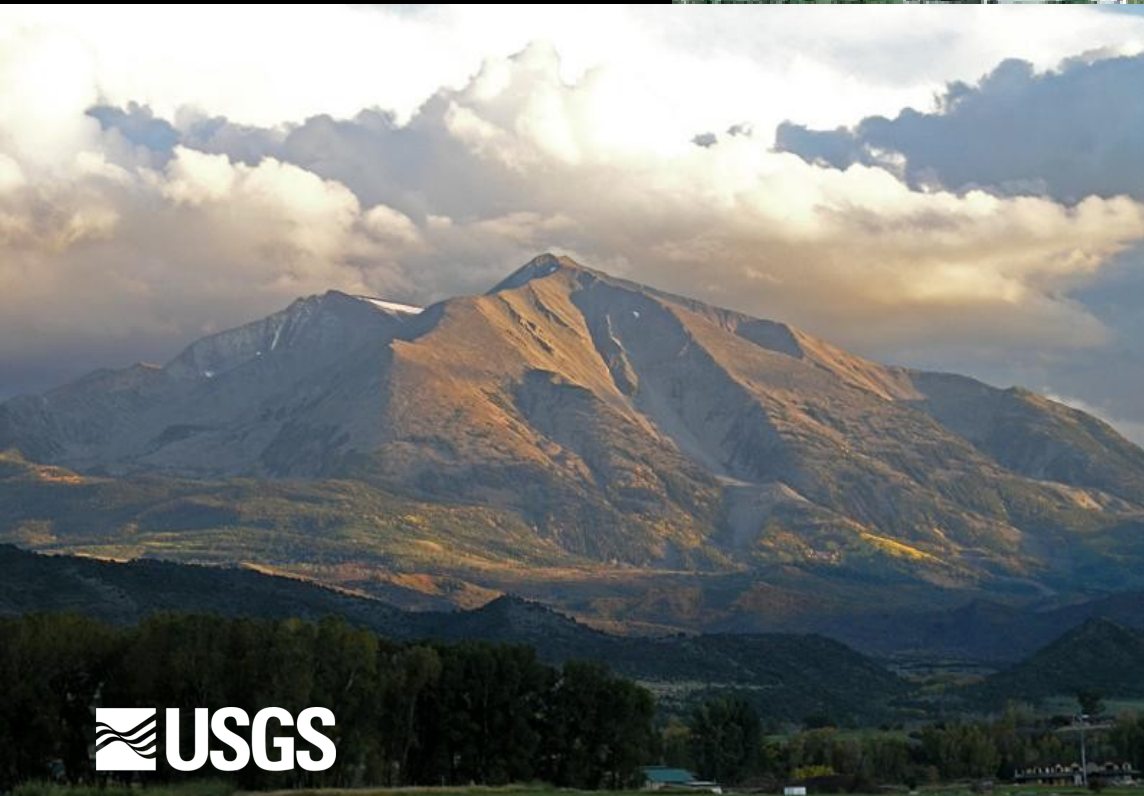
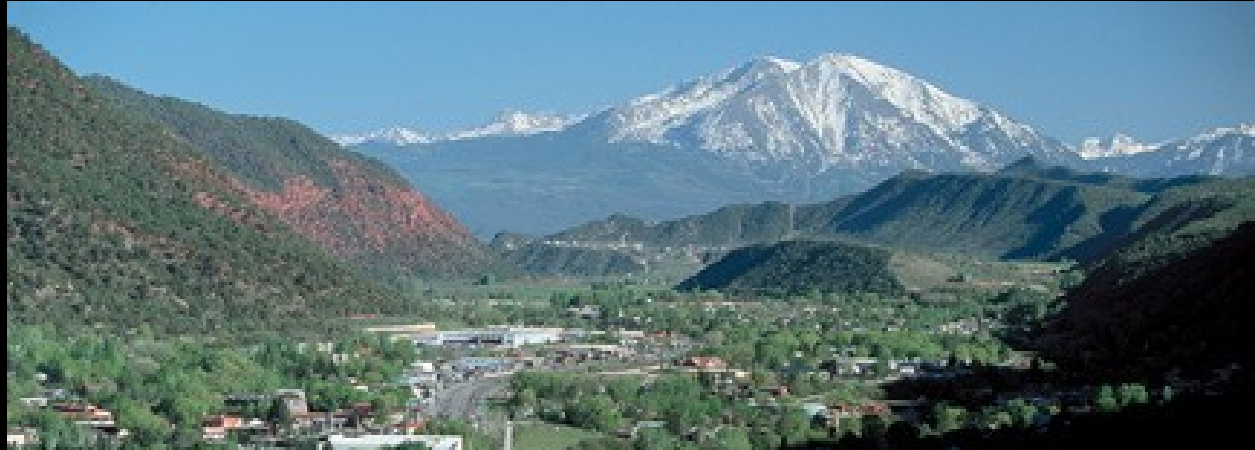


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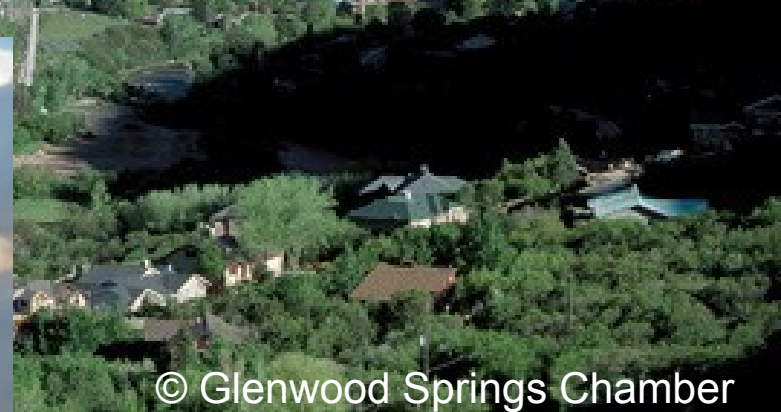




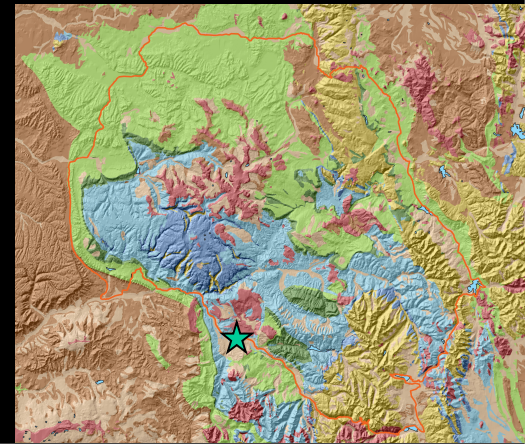
# Day 4-5 ~ Roaring Fork Valley & Mt. Sopris



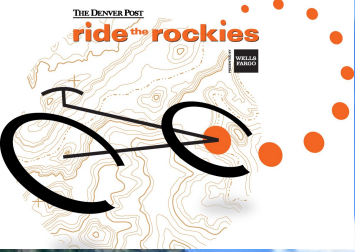
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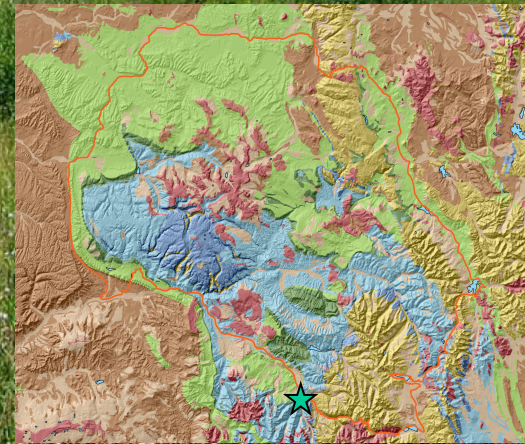




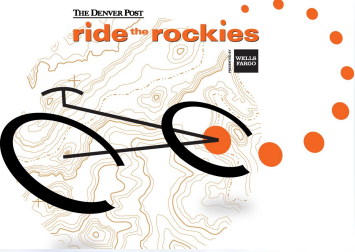
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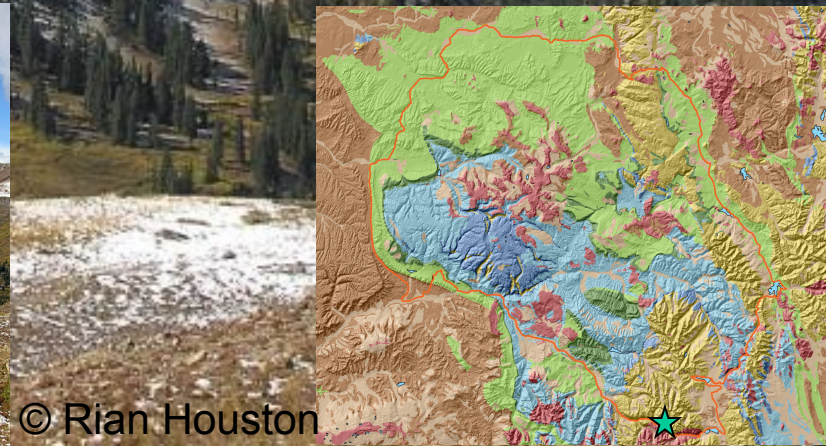
© Norm Herr





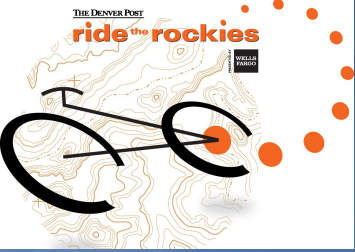


# Day 6 ~ Independence Pass



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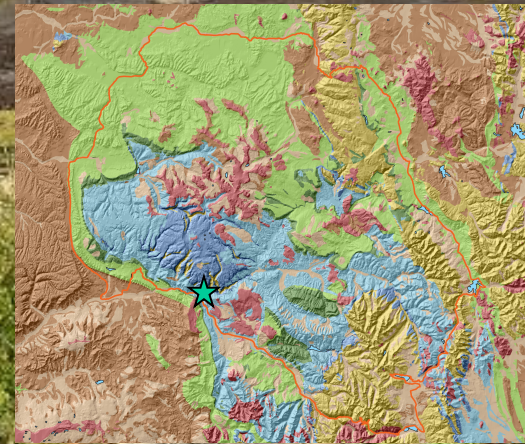




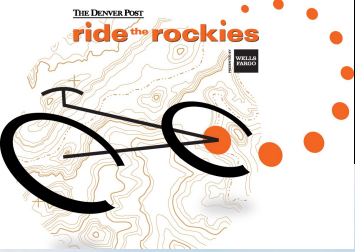
# Day 6 ~ Twin Lakes



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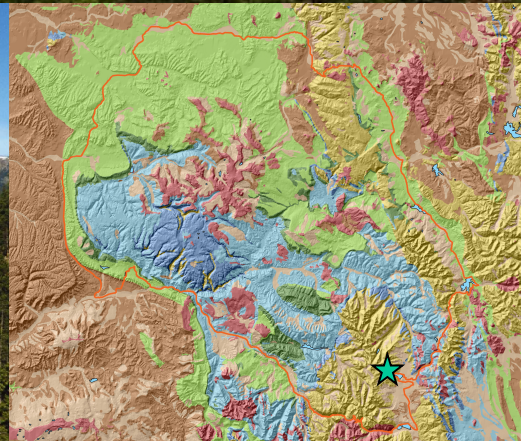


# Day 7 ~ Turquoise Lake

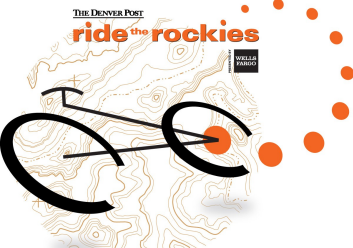


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# Day 7 ~ Fremont Pass



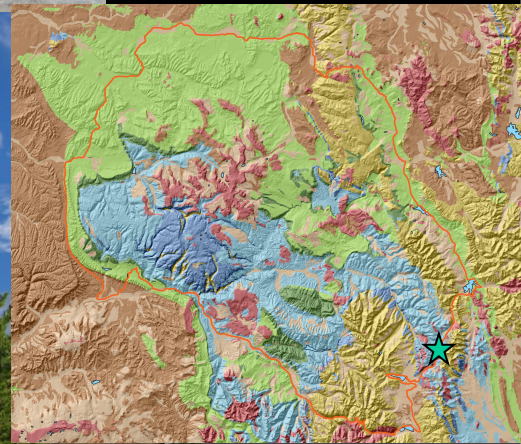
Mark, Kevin, & Janet



Tom & Ren

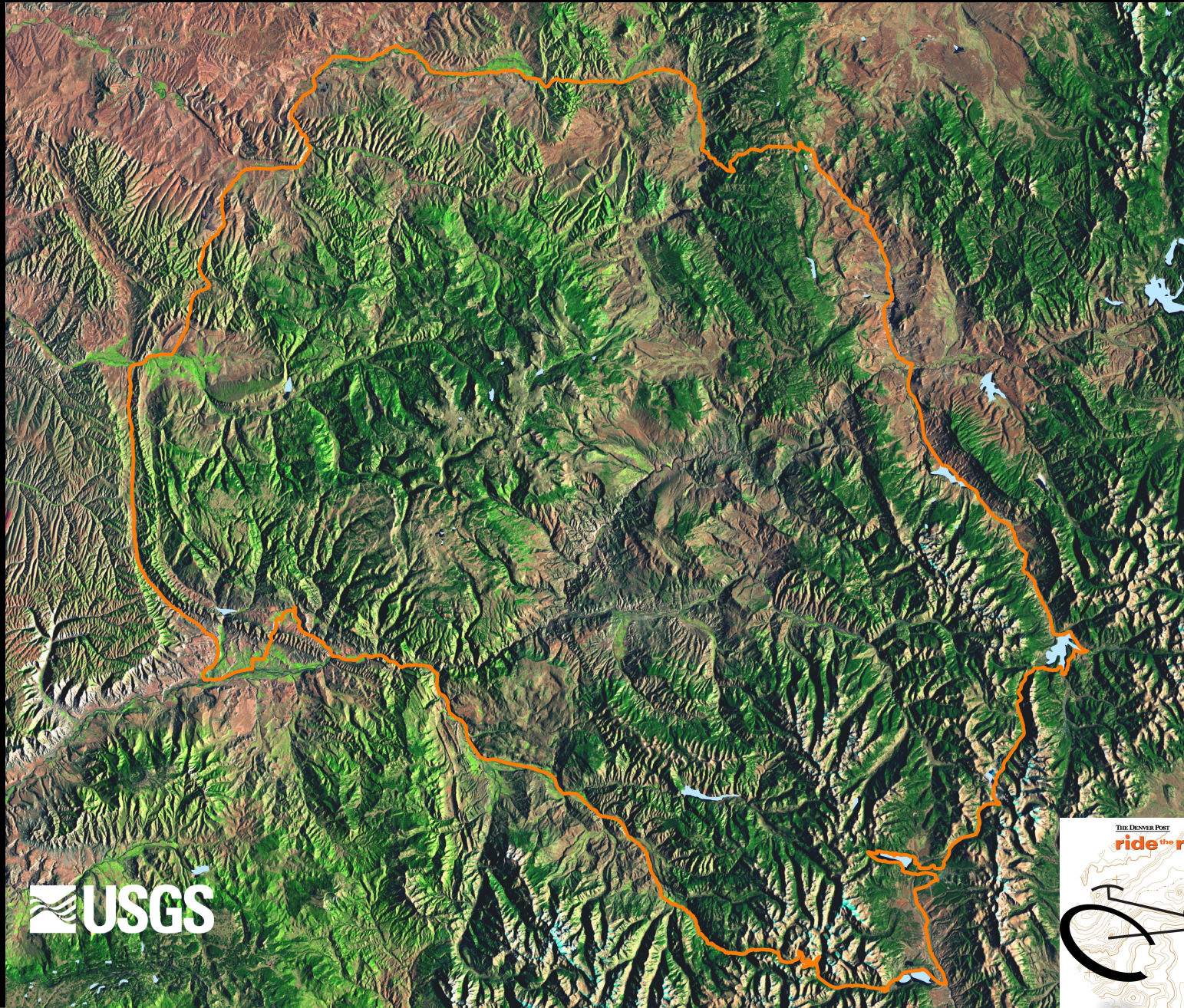


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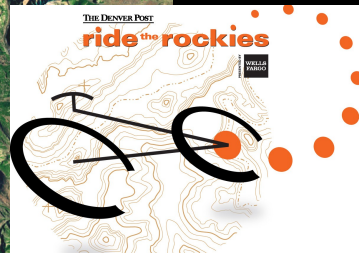




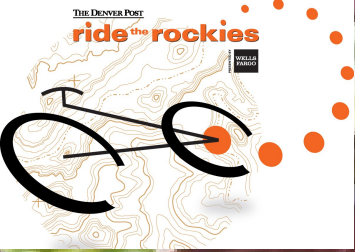
# Ride The Rockies 2007



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*These people helped ~*



**Susan  
Rhea**



**Paco VanSistine**



**Amber Hess**



# Amy, Tom, Paul, Janet, & Ren



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